# The Business Model

Access to broadband services for all of the Commonwealth's residences and businesses is critical to the future of Virginia and to the quality of life of all Virginians. The effort to expand economic development opportunities by promoting broadband access is an integral part of the state's economic development mission and supports the state's efforts toward job creation, business expansion, community empowerment, and individual and personal growth. Broadband also is a key to health and safety, life-enhancing/saving medical services, and effective public safety. Consequently, assisting local communities in identifying and developing business models to finance deployment and provide long-term sustainability for broadband is a major focus of the Broadband Roundtable.

The expansion of broadband services to all areas of the Commonwealth is much like the advent of rural electrification. Early in the last century, electric service was regarded as a luxury only available to the rich and to the well located. Rural residents were the last to benefit from the advances being made by the new technology. After the failure of electricity providers to address the needs of rural communities, coordinated efforts by localities and the private sector resulted in the creation of rural cooperatives, electric authorities, and other joint efforts to drive the full deployment and adoption of this technology to all parts of the Commonwealth. Such too is the case with the technology for high-speed access.

Traditional providers have been highly successful in meeting the needs of urban areas across the Commonwealth. Many Virginia cities and urbanized corridors have multiple providers competing and offering a wide array of technological services and products. Unfortunately, there remain large populations in too many communities, both rural and suburban, that are unserved or underserved. State efforts through the Tobacco Commission and the Department of Housing and Community Development (DHCD) have helped in closing the existing gap but additional efforts are necessary.

Like rural electrification, rural and suburban communities are recognizing the benefits of broadband access and are moving forward on their own to provide access to their residents and businesses. These case studies form the basis for this section of the *Report* of the Broadband Roundtable.

## Community Case Studies

Case studies from communities across Virginia have been shared with the Broadband Roundtable and have been incorporated into this section of the *Report*.

Following its formation in June 2007, the Broadband Roundtable received testimony from localities across Virginia of community-based efforts for broadband deployment. From oral presentations to site visits, Roundtable members learned firsthand the innovative approaches used by localities to deliver broadband service to residences, businesses, schools, and government facilities. Local community leaders,

representatives from the private sector, and government professionals have shared information of their successes and failures and lent of themselves, their time and talent in the development of a report that would serve as a blueprint for advancing the Governor's goal of ensuring broadband access.

Moreover, the Virginia legislative Joint Commission on Technology and Science (JCOTS) also shared with the Roundtable its findings on broadband and has collaborated with the Roundtable in the development of legislation and other actions to advance and sustain broadband service.

In addition to presentations made to the Roundtable, the Business Model Committee working jointly with the Virginia Resources Authority (VRA) requested and received information from local communities detailing their individual efforts to address broadband gaps in their communities. VRA posed several questions to chief executive officers of communities identified by the Center for Innovative Technology (CIT) as having implemented a local strategy for broadband deployment. These questions allowed the community to provide its own description and project assessment and to recount, for the benefit of others, specific challenges faced in the delivery of broadband service. Communities were also asked to include copies of any ordinances and/or resolutions adopted by the governing board, agreements, RFPs, RFQs, and financing contracts.

VRA questions included:

1.  Who drove/is driving the broadband initiative (region, local government, residents, private sector)?
2.  What technology was used?
3.  What, if any, legal entity was formed (wireless authority, public private partnership, etc.)?
4.  How was the initiative funded?
5.  Were any state or local assets leveraged (towers, rights-of-way, etc.)?
6.  What, if any, barriers were encountered?
7.  What is the status of the project?

Several communities responded to the request for information and their case studies from these communities are incorporated into this report. Responding Virginia communities include: Accomack-Northampton PDC, the Appomattox, Arlington, Bland County, Bristol, Clarksville, Danville, Dickenson County, Franklin County, Highland County, King George County, LENOWISCO, Manassas, Mathews County, Northern Neck PDC, Page County, Patrick County, Prince George County. In addition to these, examples of projects in Pennsylvania, Kentucky and Texas are included with their background supporting documents that may be useful in reviewing similar agreements/relationships.

# Analysis of Case Studies

From wireless technology to major investment in fiber infrastructure, Virginia communities are utilizing various technologies to provide broadband service. They are also utilizing various business arrangements to finance and support the service. This section reviews those arrangements and focuses on their commonalities as well as their differences. It examines who drove the process and why the universal community assets can be used to leverage and support broadband deployment, the incorporation of existing utility operations and alternative funding mechanisms.

## *Driving the Initiative*

From local business leaders to Parent Teachers Associations, the call for universal connectivity can come from any segment of the community. Community groups, business owners, public safety personnel, educators, medical professionals, and others have recognized that the ability to connect local centers of activity for better service and delivery is important and that it can only be provided through universal access. Moreover, as more and more people and activity centers are connected, communities are able to grow dramatically through interactions made possible by broadband technology.

In the interest of advancing economic development goals, business and government leaders in several counties highlighted led the charge for broadband service. For instance, Franklin County's case study noted that the thirst for broadband in that county generated from citizens with education and recreation interests, from businesses with expansion interests, and from the county government's desire to link remote offices.

In Appomattox, Bland, Page, and King George counties, the drive for economic development led government and the private sectors to come together for broadband deployment.

## *Technologies Used*

Communities have utilized various technologies to advance local broadband service. Fiber, copper technology (DSL), cable modems, Wi-Fi, wireless, and broadband over powerlines are examples cited in the case studies.

Strengthened by support from Mid-Atlantic Broadband, a fiber optic broadband network over which digital data, voice, and video signals could be transmitted was constructed in the city of Danville. Franklin County formed a wireless mesh network with a local wireless internet service provider to expand the county's local government wide-area network and provide broadband options for citizens. In Appomattox County, DigitalBridge Communications, in partnership with Mid-Atlantic Broadband, built one of the first WiMAX broadband wireless networks in the country. In Nelson County, International Broadband Electric Communications, in conjunction with Central Virginia Electric Cooperative, began deployment of their broadband over powerline. Each locality engaged the services of a consultant to assist it in determining the technology needed to

meet local needs.  Consultants working with Prince George County recommended that the County build both a wireless network to bring broadband to the unserved areas and also fiber.

## Planning Process

A VRA advisory group of local government executives, including city managers, county administrators, directors of planning district commissions, directors of public utilities, and public safety officials developed a checklist of questions that localities can use to self-assess their community broadband needs, the local leadership approach, core business case elements and financing approaches and options.  The checklist is designed to facilitate the self-evaluation by the community of crucial building blocks to a successful and sustainable broadband project.  No answers are provided by outside parties, but rather each community can custom design the approach and components that best suit its unique circumstances using the guiding questions in the checklist.

The Community Self-Examination for Broadband Deployment developed by VRA's Community Investment Advisory Council is shown below:

### *Community Self-Examination for Broadband Deployment*

1. Potential Questions – Local Leadership

   -is broadband needed?
   -what's available now?
   -who is making the case for broadband? (should be included)
   -who makes this type of decision for the community? (individuals, entities, or some combination thereof)
   -who makes the case of why broadband should be made available?
   -why should broadband be made available?
   -who provides the technical support for planning (procurement, contracting, financing, legal, etc.)?
   -who provides the follow-up/supervision during deployment?

2.. Potential Questions – Core Business Case

   -what is the status of current broadband access?
   -where are the gaps (geographic, government, educational, commercial, residential, speed, etc.?
   -how long are each of the gaps likely to continue?
   -what are the assumptions underlying the projections in the question above?
   -which gaps are likely to persist over time?
   -why are the gaps expected to persist?
   -what are the current projected customer base(s) in the gap areas?
   -what are the assumptions underlying the projections in the question above?

-what are the respective roles of the private sector and the public sector in the options identified?
-what options exist to address the persistent gap?
-what are the strengths and weaknesses of each option listed in the question above?
-what are the 10-15 year projections of revenues and expenses for the business model options under consideration?
-what technology investments are required for each option under consideration?
-what factors could positively affect the revenue and expenditure projections above?
-what factors could negatively affect the revenue and expenditure projections above?

3. Potential Questions – Financing of Broadband Business Models Types

-Models = Vertically-integrated model (public entity serves as Internet Service Provider), Public-Private Partnership? Others?

-who pays, how much. and when?
-what other infrastructure investments can be leveraged in combination with broadband initiative?
-how can you align your financing with your projected project cash flow?
-who is financing entity?
-what are the assumed terms and conditions of the financing\
-what are the impacts (real or imagined) to creditworthiness?
-who assumes the all/partial financial risk and what form does that risk take?
-what are the financial contingencies for the deal----the exit strategy?
-what is the current telecom spend for the public sector participation?
-what option exists to reallocate telecom spend?
-what internal contributions could be available to offset potential costs?
-what grant monies (federal, state, local, private, nonprofit)

In addition to the self-assessment above, a review of the case studies submitted reveals some commonality in approaches utilized by communities to plan for, finance, and implement a strategy for broadband deployment and sustainability. Activities included in the planning process included: the determination of the *system design, technology, and capacity*, a *business plan*, a *financial plan*, and a *plan for the ongoing maintenance and sustainability*. Discussion of these components follows:

## System Design, Technology, and Capacity

Each community determined through a planning process the goals and objectives of the proposed system design. This included functional specifications like bandwidth, the number of sites and/or systems that would have to be connected; performance specifications including minimum levels and broadband standards for systems requiring inter-operability with other networks; appropriateness and availability of the proposed technological solutions including infrastructure that would be deployed.

Often professional and/or consultative support was needed in making a determination of system design, technology to be utilized, and capacity. Local communities have benefited from the direct assistance provided by the CIT, DHCD, the Tobacco Commission and Mid-Atlantic Broadband, and the Office of Telework within the Office of the Secretary of Technology. Other technical support, particularly that relating to the procurement of services, can be found within the Department of General Services.

### Business Plan

Critical to each community's planning process were the essential elements of a business plan, including the need for broadband, description of the community to be served; any existing levels of connectivity currently available and the current cost of those services; a summary of the extent of community engagement to the proposed broadband deployment, details on the potential number of users of broadband access, details on the kind of broadband-dependent services that may be provided as a result of broadband access, overview of the proposed project management, the appropriateness and availability of the proposed technological solution and a plan for the proposed implementation of the network including a time line with project milestones and a commitment to adhering to a set critical path.

### Financial Plan

The planning process for each community included details of the market and revenue and cost projections to support the sustainability of the proposed broadband services for a period of several years (3-5) including a breakdown of the required costs for deployment.

In developing a financial plan or strategy, each community made assumptions for the expected number of residents and businesses that would have access to the broadband service and revenue estimates based on the number of residents and businesses that had agreed to subscribe to the service for the first year. Additionally, assumptions were made for multi-year subscriber and population growth rate, average revenue per subscriber, measurability, and types of services to be offered. Finally, communities identified potential risks that could affect implementation of the project and any strategies or solutions that could be used to mitigate or prevent these impacts.

### Maintenance and Sustainability

Finally, a determination of the maintenance requirements of the system is extremely vital in the planning process. Answering questions like how long should maintenance support be provided; how will the service be monitored for problems; how with service growth be accommodated; and what software will be used to generate utilization reports and service availability reports are helpful in assessing costs and sustainability.

In connection with these important components for community broadband planning, the Virginia Resources Authority (VRA) working jointly with its Community Investment Advisory Council (CIAC), a 25-member group of county administrators and deputy administrators, city managers and deputy managers, directors of planning district commissions, public utilities directors, public safety professionals, and budget and finance professionals, developed questions that communities should answer in its planning deliberations. These questions are made part of this report.

Each case study demonstrates that successful and sustainable programs have been developed when there is a coordinated effort between the public and private sectors. A review of these models provides insight into the planning process utilized by communities in assessing the *need for* broadband service, *identifying the technologies* used to deliver broadband service, *business plans* that analyzed the various approaches, and *financial options available* to finance this activity.

## Major Business Models for Broadband

Several business models have been identified for broadband deployment. An *InfoDev Study On Local Open Access Networks For Communities and Municipalities* lists the following:

### Local Wholesale Network Model

In this model, the network operator provides a wholesale service where it leases access to the network to service providers that use the network to provide service to their retail customers. In most instances, these open access networks have been financed and are owned by the local government or by a community cooperative. These open access networks are designed to stimulate competition by providing network access to all service providers and reducing the cost of this access.

### Public-Private Partnership

In this model, the local government enters into an agreement with a private sector firm to operate and manage the network and is the only supplier of services to the end user. The local government may own the network or has entered into an arrangement with a company that will also build and finance the network. The major advantage to this approach is that there is usually less risk to the local government.

### Municipal Public Utility Model

In this model, the local government builds and controls all aspects of the network and is the sole service provider operating it as a public utility. This is particularly prevalent in communities where there are existing municipal owned electric and power systems.

## Project Financing

Information relating to grant financing from the Tobacco Commission, the Virginia Department of Housing and Community Development, and USDA's Rural Development Rural Utilities Program is included in the Broadband Roundtable Report.

VRA is able to provide cost-effective financing for any technology, infrastructure, equipment for broadband projects. Through an interim financing program established with a private banking partner, funds can be made available to meet any borrower and project timeframe.

Under the Virginia Pooled Financing Program (the VPFP or Pool), VRA sells bonds and then loans the proceeds to local governments to finance their eligible projects.

The VPFP enables local governments to save money in two ways. First, interest rates for a larger bond issue are more competitive because the bonds can be offered to a broader investor base with demand from major institutional bondholders. The VPFP utilizes an innovative, senior/subordinate structure that dramatically saves VRA borrowers on interest costs due to the favorable ratings given the program. Both Moody's and Standard & Poor's upgraded VRA's credit rating to the coveted "AAA" level for the senior bonds (70% of the bond issue). VRA borrowers now benefit from a blend of natural "AAA/AA" interest rates.

Second, pooling saves on the costs of issuance on the loan. Through economies of scale and sharing of costs, Pool borrowers have saved an average of 50 - 70% in costs of issuance versus a traditional stand-alone bond issue. Furthermore, VRA borrowers maintain flexibility and control over their local debt.

A local government does not need a credit rating of its own to obtain a loan from VRA, nor is it necessary for a local government to purchase bond insurance to make its bonds more attractive to investors.

Application and loan origination is a relatively simple process, and VRA staff is available to assist local governments in all aspects of the loan transaction.

VRA's Equipment and Term Financing Program enhances options for borrowers desiring to finance projects for terms less than 15 years. Rates are minimized with a rigorous procurement process for a banking partner. This program is ideally suited for localities transitioning from "pay-as-you-go" policies for such purchases as public safety equipment and provides the financial component of energy performance contracts.